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## Abstract of the Invention

The invention disclosed herein comprises methods of simplify analysis microarrays to characterization of genes and their function. In one aspect of the invention the methods are used to identify and characterize antibodies having binding affinity for a specific target antigen. The invention further comprises a method of determining gene expression at the protein level comprising contacting an array of characterized or uncharacterized antibodies on a solid surface with one or more proteins and identifying the antibodies to which said protein(s) binds. This method can be additionally used to compare the protein expression in two different populations of cells, such as normal cells and cancer cells or resting cells and stimulated cells. A further aspect of the invention comprises a method of determining expression at the protein level comprising gene contacting a microarray of nucleic acid samples derived from a variety of different sources with one or more nucleic acid probes then identifying the sample samples to which the probe binds.

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